

### **REMARKS**

This is a full and timely response to the outstanding Action mailed August 21, 2006. Upon entry of the amendments in this response, claims 1 - 23 remain pending. No amendment is made in claims, drawing or specification.

The Examiner is thanked for the thorough examination of this application and the continued allowance of claims 11-23 (and the indication that claims 7 and 10 contain allowable subject matter). Additionally, Applicant respectfully submits that claims 1-10 are also clearly in condition for allowance, as will be disclosed herein below.

Applicant presents the remarks below in an effort to further point out distinctions to the Examiner at this time, in hopes of avoiding an unnecessary appeal process for this case. The accompanying remarks are necessary in light of the position taken in the Final Office Action. The remarks of the instant response further clarify and distinguish Applicant's invention over Examiner's grounds of rejection and supporting reasoning presented in the Final Office Action. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

### **Rejections under 35 U.S.C. 102**

The Office Action indicates that claims 1-2, 5 and 8 are rejected under 35 U.S.C 102(e) as being anticipated by *Wang et al.* (U.S. Pub. No. 2004/0074869). Applicants respectfully traverse the rejections.

With respect to *Wang*, *Wang* discloses a fluorine-free integrated process for etching aluminum lines, in which the main etch uses a combination of  $\text{BCl}_3$  and  $\text{Cl}_2$  and a passivation gas including hydrocarbons which are needed to create a protective carbon-

based polymer on the walls of the vertical featuring being etched in the aluminum (See paragraph# 38). Moreover, *Wang* discloses relatively thin polyethylene coatings on the sidewall of the aluminum layer being etched provide acceptable profile control (See paragraph# 40). Furthermore, *Wang* discloses when the chamber cleaning is performed after every wafer, a stepped plasma clean of oxygen followed by chlorine is effective at removing most residue before they accumulate to a thickness at which they would flake off in sizable particulates (See paragraph# 47).

Note that *Wang* teaches the chamber clean is performed after each substrate etching cycle and with no wafer in the chamber (See paragraph# 22), but *Wang* nowhere discloses or teaches that the chamber clean is performed before inducing lateral etching of the aluminum lines. Moreover, *Wang* teaches a polymer layer formed on the sidewall of the aluminum layer is employed to protect the aluminum layer for profile control during etching aluminum lines. Clearly, in the disclosure of *Wang*, the thickness accumulation of the residue (polymer) formed on the walls of the chamber is irrelevant to protection of the aluminum layer for profile control during etching aluminum lines. In other words, the chamber cleaning disclosed by *Wang* is irrelevant to inducement of lateral etching of the aluminum lines. Furthermore, the chamber clean disclosed by *Wang* is employed to prevent residue from flaking off in sizable particulates, rather than prevent from lateral etching of the aluminum lines.

Turning now to claim 1, that claim recites:

1. A semiconductor process for controlling etching profile, comprising the steps of:
  - providing a plurality of substrates, wherein each substrate comprises a film to be etched and an overlying masking pattern layer thereon;
  - and

successively etching the film to be etched on each substrate in a plasma chamber using the masking pattern layer as an etch mask, *a polymer layer being deposited over the inner wall of the plasma chamber during the etching;*

*wherein an intermediary cleaning process is performed in the plasma chamber between the etchings before the deposited polymer layer reaches such a degree as to induce lateral etching on the film to be etched of the next substrate.*

(Emphasis Added).

Applicants respectfully assert that *Wang* does not teach or otherwise disclose at least the features/limitations emphasized above in claim 1. As set forth, the Examiner is reminded that *Wang* teaches the lateral etching of the aluminum lines is prevented by forming a polymer layer on the sidewalls of the aluminum lines, rather than performing an intermediary cleaning process. That is, the cleaning step disclosed by *Wang* is not performed before the polymer layer formed on the walls of the chamber reaches such a degree as to induce lateral etching on the aluminum layer. Therefore, Applicants respectfully request that the rejection of claim 1 be removed and that claim 1 be placed in condition for allowance. Since claims 2, 5 and 8 are dependent claims that incorporate the limitations of claim 1, Applicants respectfully request that these claims also be placed in condition for allowance.

#### **Rejections under 35 U.S.C. 103**

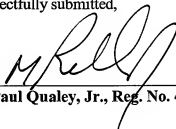
The Office Action indicates that claim 4 is rejected under 35 U.S.C. 103 (a) as being unpatentable over *Wang* in view of *Qian* (U.S. 6,699,399) and that claims 3, 6 and 9 are rejected under 35 U.S.C. 103 (a) as being unpatentable over *Wang* in view of *Zhong* (U.S. 6,127,927). Applicants respectfully traverse the rejections.

In particular, Applicants respectfully assert that the combination of *Wang* and *Qian* and *Wang* and *Zhong* are legally deficient for the purpose of rendering claims 3, 4, 6 and 9 unpatentable, because the combination does not teach or reasonably suggest at least the features/limitations emphasized above in claim 1 as lacking in *Wang*. That is, neither *Qian* nor *Zhong* teaches or reasonably suggests these features/limitations emphasized above in claim 1. Since claims 3, 4, 6 and 9 are dependent claims that incorporate the features of claim 1, Applicants respectfully assert that these claims are in condition for allowance. Additionally, these claims recite other features that can serve as an independent basis for patentability.

**CONCLUSION**

In light of the foregoing reasons, Applicants respectfully submit that all rejections have been traversed, rendered moot and/or accommodated, and that the pending claims 1-23 are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned agent at (770) 933-9500.

Respectfully submitted,



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